



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

D5415-3

Job Sheet 177606

Accounting Job RD17-1027-01



Part No: D5415-3

Job Qty: 5 ea

Part Name: STD Height Saddle



Part Weight: 0 lbs

Status: Scheduled

Priority: Medium

Job Created: 5/15/18

Job Tracking No:

Due Date: 5/18/18

Created By: Michelle Gagnon-Donovan

Type: R+D

Description:

Note: D5415 REV.B IPP REV:A 16.09.16 NEW ISSUE DD VERF:JFS

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time	
200	Rework Start up	5 Ea	5/18/18	5/18/18	0.00	0.00	Start Up Machining-3		msf. 18/05/16
210	Rework	5 pcs	5/18/18	5/18/18	0.00	0.00	HAAS1-4		A.P. 18-05-16
220	Rework	5 pcs	5/18/18	5/18/18	0.00	0.00	QC2 Machining-3		B.A. 18-05-16
230	Rework	5 pcs	5/18/18	5/18/18	0.00	0.00	QC8 Machining-4		
240	Rework	5 pcs	5/18/18	5/18/18	0.00	0.00	HandFinish1		
250	Rework	5 pcs	5/18/18	5/18/18	0.00	0.00	QC3		AK 18-5-16
260	Rework	5 pcs	5/18/18	5/18/18	0.00	0.00	Spray Paint		
270	Rework	5 pcs	5/18/18	5/18/18	0.00	0.00	QC14		AK 18-5-16
280	Rework	5 pcs	5/18/18	5/18/18	0.00	0.00	Packaging3		msf. 18/05/16
290	QC21-SA	5 Ea	5/18/18	5/18/18	0.00	0.00	QC21		msf. 18/05/16

★
see attached

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
D5415-3	STD Height Saddle	5 Ea (1 ea)	200-Rework Start up	5071717

Job Allocations

Operation	Component Part	Required	Inventory	Allocated
200-Rework Start up	D5415-3 P	5	0	0

Part Specifications

Specifications could not be found.

Plex 5/15/18 10:28 AM Dart.Gagnon.Michelle



Container No: S071718



Part: D5415-3

Job No: 177606

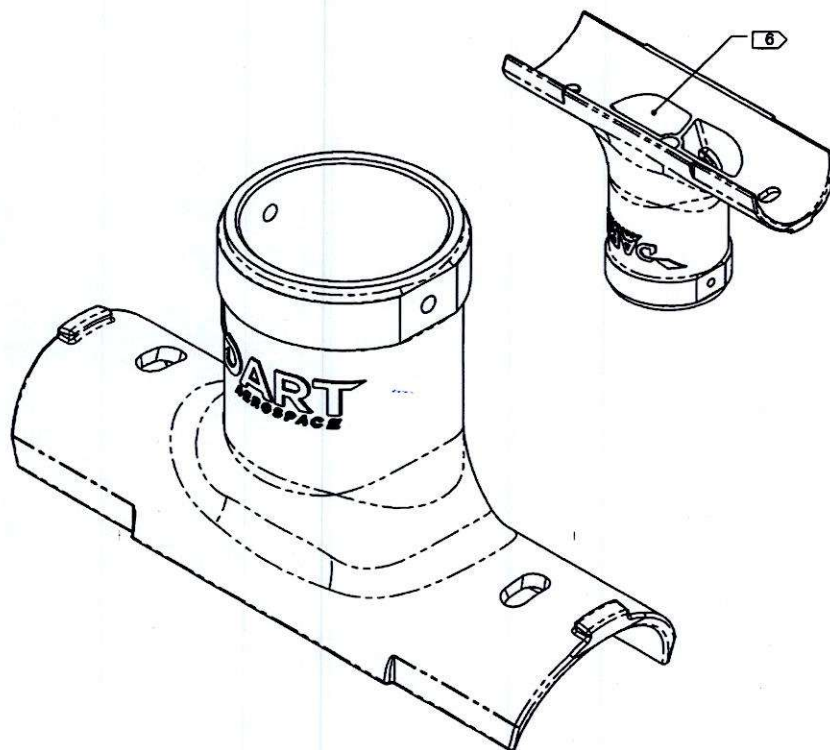
Serial No/Batch: S071718

Revision: B

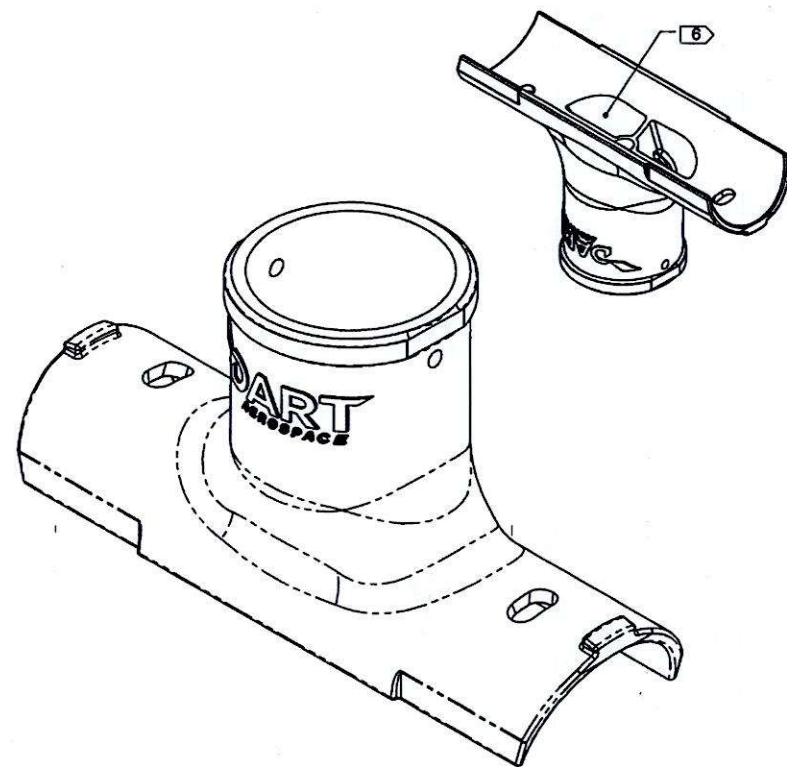
Inspector:

Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
CANADA
TEL.: 1 613 632-5200
Email: sales@dartaero.com
www.dartaerospace.com

Date: 05/16/18



D5415-1 MID HEIGHT SADDLE



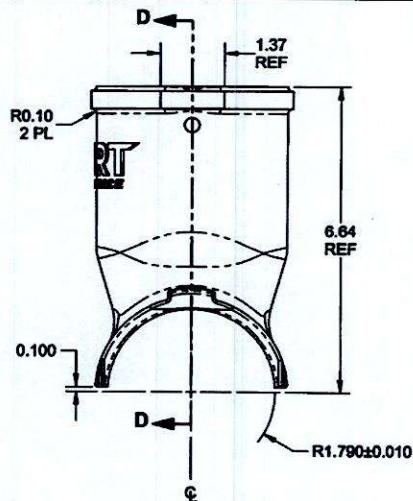
D5415-3 STANDARD HEIGHT SADDLE

- NOTES:**
- 1) MATERIAL: MAKE FROM D5415-1C/3C
 - 2) FINISH: PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2.1.3.3 (FLOAT SKIDTUBE PRIMER)
PAINT OUTSIDE PER DART QSI 005 4.2.2.4 (FLOAT SKIDTUBE PAINT)
 - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
 - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
 - 5) BREAK SHARP EDGES: N/A
 - 6) IDENTIFICATION: IDENTIFY PART NUMBER AND BATCH NUMBER PER QSI 044 METHOD 6.1. LOCATE APPROX AS SHOWN
 - 7) WEIGHT: D5415-1 is 3.88 LBS, D5415-3 is 3.55 LBS

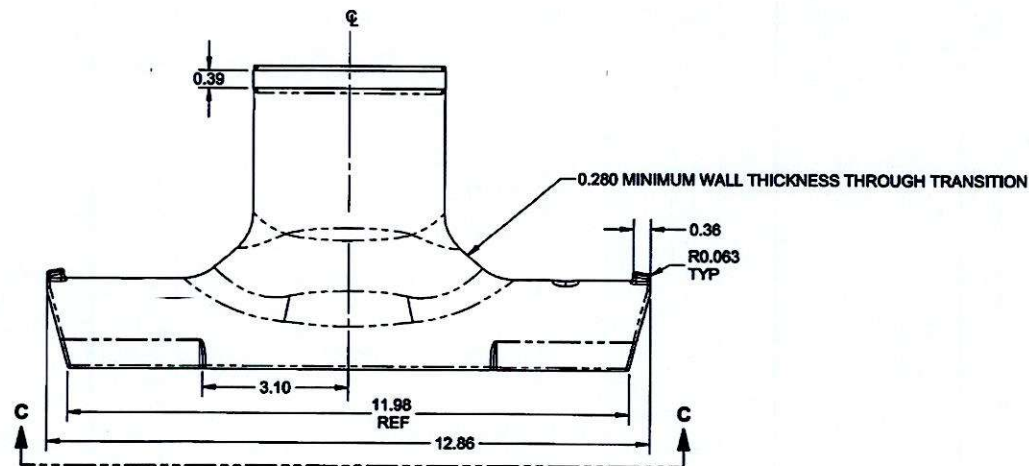
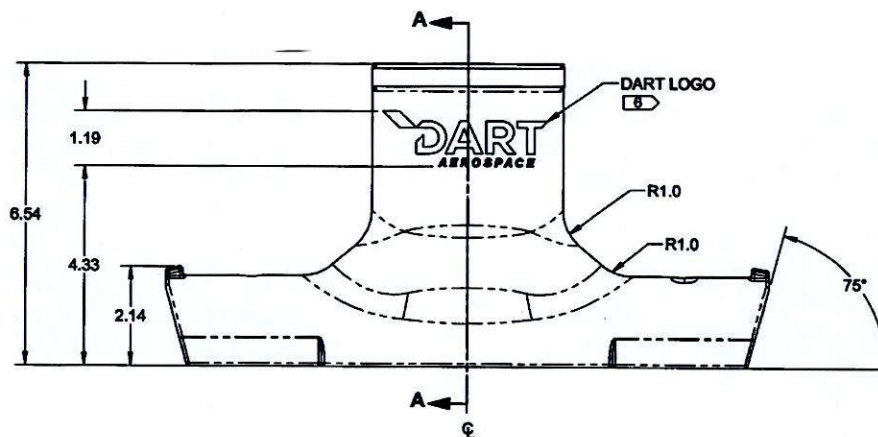
RELEASED
2017-09-22
ECN17-64

B	ADDED -3 STANDARD HEIGHT SADDLE. REVISED NOTES, REMOVED CAST PIN FROM -1 SADDLE. Ø0.323 HOLE WAS Ø0.325, SECTION B-B AND D-D ±0.005 WAS ±0.010	ML	17.09.05
A	NEW ISSUE	ML	16.05.17
REV.	DESCRIPTION	BY	DATE
DESIGN	ML	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	ML		
CHECKED	AJS	DRAWING NO.	REV. B
MFG. APPR.	DD	D5415	SHEET 1 OF 4
APPROVED	HS	TITLE	SCALE
DE APPR.	CP	SADDLE	NTS
DATE	17.09.05	COPYRIGHT © 2016 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD	

APPROVED



D5415-3C STANDARD HEIGHT SADDLE B



NOTES:

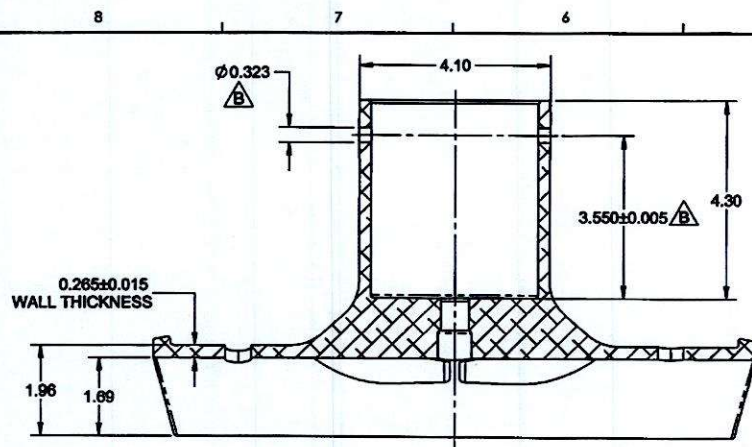
- 1) MATERIAL: CAST FROM F357.0 PER AMS 4289 AND HEAT TREAT TO T6 CONDITION PROPERTIES TO BE VERIFIED BY SUB-SIZED SEPARATELY CAST TEST BARS
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: DART P/N AND LOGO CAST INTO PART AS SHOWN
- 7) WEIGHT: N/A
- 8) COSMETIC WELD REPAIR PER AMS 2694 PRIOR TO INSPECTION AND HEAT TREAT
- 9) INSPECTION: EACH PART MUST PASS X-RAY CL. 1 GR. B PER AMS 2175
EACH PART MUST PASS FPI CL. 1 GR. B PER AMS 2175
- 10) ALL NON DIMENSIONED FEATURES MUST MAINTAIN A TOLERANCE OF +/- 0.030 PER CAD FILE D5415-3-REV. B.STP
- 11) ANY ADDITIONAL MATERIAL REQUIRED FOR POST-CASTING MACHINING IS NOT SPECIFIED ON THIS DRAWING.

RELEASED
2017-09-22

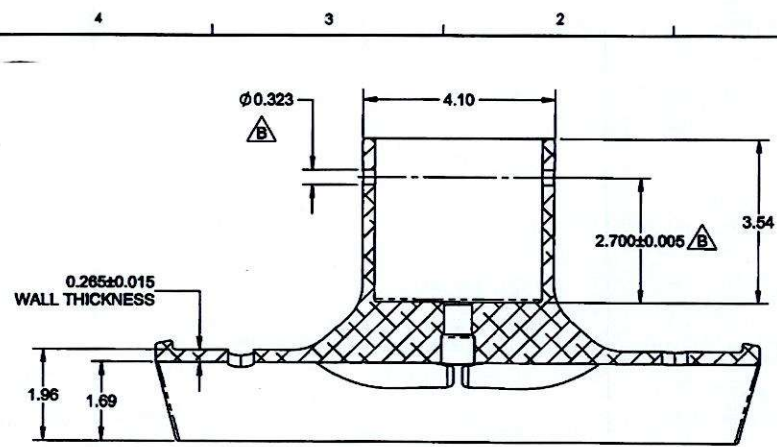
APPROVED

DESIGN	ML
DRAWN	ML
CHECKED	AJS
MFG. APPR.	DD
APPROVED	HS
DE APPR.	CP
DATE	17.09.05

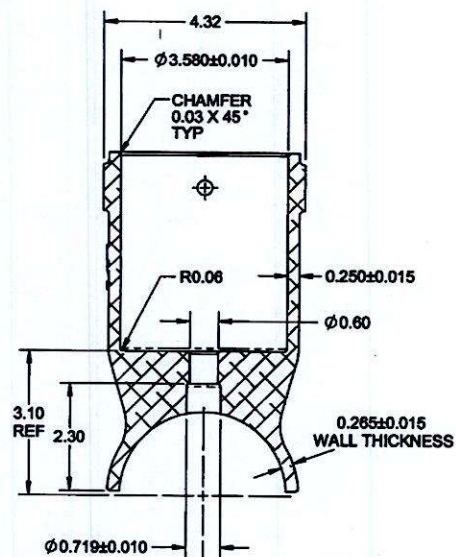
DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWING NO. D5415	REV. B
TITLE SADDLE	SHEET 3 OF 4
SCALE NTS	
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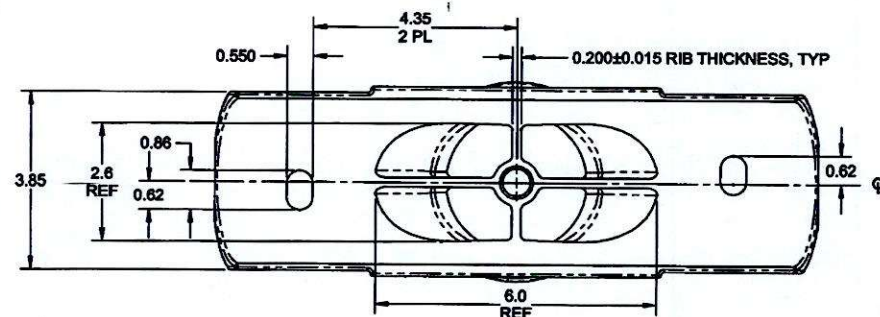
SECTION B-B



SECTION D-D



SECTION A-A
D5415-1C SHOWN, D5415-3C SIMILAR



VIEW C-C

RELEASED
2017-09-22

APPROVED

DESIGN	ML
DRAWN	ML
CHECKED	AJS
MFG. APPR.	DD
APPROVED	HS
DE APPR.	CP
DATE	17.09.05

DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWING NO. D5415	REV. B
TITLE SADDLE	SHEET 4 OF 4
SCALE NTS	
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Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID PO33686

Purchase Order Date 9/16/2016

PO Print Date 9/27/2016

Page Number 1 of 3

Order From :
ALPHACASTING INC.
391 STE CROIX
ST LAURENT, QUEBEC H4N 2L3
CANADA

VC-AL001

Ship To : DART AEROSPACE LTD
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

Contact Name
Vendor Phone 514-748-7511 ext 224

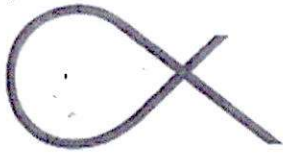
Ship To Contact
Ship To Phone
Ship Via:
Ship Acct:

Buyer
Customer POID
Customer Tax # 10127-2607
Terms Net 30
Currency CAD
FOB Destination-Collect

Line Nbr	Reference Vendor Part Number Line Comments Delivery Comments	Description/ Mfg ID	Req Date/ Taxable Promise Date	CD	Req Qty/ Unit of Measure	PO Unit Price	Extended Price
1	D5415-1P PER DRWG D5415 REV.A CAST FROM F357.0 PER AMS 4289 AND HEAT TREAT TO T6 CONDITION INSPECTION: EACH PART MUST PASS X-RAY CL 1 GR. B PER AMS 2175 EACH PART MUST PASS FPI CL 1 GR. B PER AMS 2175	Saddle	11/18/2016 Yes 11/18/2016	FN	26.00 Each	\$715.56	\$18,604.56
Line Total:							\$18,604.56
2	71900-90 PER QUOTE 26518	WAX INJECTION MOULD	11/18/2016 No 11/18/2016		1.00	\$15,000.00	\$15,000.00
Line Total:							\$15,000.00
3	71900-90	SIZING FIXTURE	11/18/2016 No 11/18/2016		1.00	\$2,000.00	\$2,000.00

Note:

9/27/2016



ALPHACASTING inc.

PRECISION INVESTMENT CASTINGS
MOULAGE DE PRÉCISION



Invoice : 46289

Invoice date : April 25, 2017

Page no.: 1

BILL TO:

DART AEROSPACE LIMITED
1270 ABERDEEN STREET
HAWKESBURY
ON K6A 1K7

SHIP TO:

SAME ADDRESS

Customer number: DART -01
Purchasorder number: PO33686
INCOTERM: FCA
Die number: 1909
P.S.T. number:

Salesperson: STEVEN GOULET
Territory: ONTARIO
Order number: 20157
Terms: NET 45 DAYS

Quantity			Item	Description	Unit price	Extended price
Ord.	Ship.	B.O.				
26	7	19	1	D5415-1P SADDLE	715.56	5,008.92

QC2

6074-26

Merci de votre commande / Thank you for your order

T.P.S/G.S.T: R 128901816

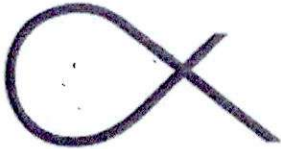
T.V.Q/P.S.T: 1010541952

Sub-total : 5,008.92

GST/HST : 651.16

PST : 0.00

Total: CAN\$ 5,660.08



ALPHACASTING inc.

PRECISION INVESTMENT CASTINGS
MOULAGE DE PRÉCISION



RELEASE NOTE AND CERTIFICATE OF COMPLIANCE

Number: 36127

Date: avril 25, 2017

Page: 1

SOLD TO:

SHIP TO:

DART AEROSPACE LIMITED
1270 ABERDEEN STREET

HAWKESBURY
ON K6A 1K7

DART AEROSPACE LIMITED
1270 ABERDEEN STREET

HAWKESBURY
ON K6A 1K7

Customer number: DART -01
P.O. number: PO33686
Invoice number: 46289
Part Number: D5415-1P
Drawing number: D5415
Specification: AMS4289-13

Description: SUPPORT CASTING
Our die: 1909 Tot. qty: 7
Our order: 20157 Material: F357.0
Rev: A E.C.O.
Draw Rev: A
Heat treat: T4 & T6

Item	Quantity	Melt	Tensile #:	Hardness	Incomming certificate	Xray report
1	5	20-12-2016	17-180	93-95HRE	0863481	FN7378

Chemical Composition of Melt

Fe=0.064 Si=6.87 Mn=0.0020 Cu=0.0034 Al=BAL. Zn=0.0037 Mg=0.594 Be=0.000 Ti=0.144 Sr=0.000

Item	Quantity	Melt	Tensile #:	Hardness	Incomming certificate	Xray report
2	2	22-11-2016	16-1010	93-95HRE	0863106	FN7210

Chemical Composition of Melt

Fe=0.070 Si=7.05 Mn=0.0028 Cu=0.0023 Al=BAL. Zn=0.078 Mg=0.589 Be=0.000 Ti=0.124

Non Destructive Test

L.P.I.: Yes Spec: AMS 2175A
M.P.I.: No Spec:
X-Ray: Yes Spec: AMS 2175A

CL: 1 GR: B
CL: GR:
CL: 1 GR: B

X-Ray: Enclosed: No
On File: Yes

- INCLUDES FAI REPORT.
- REF NCR 17-6255.

I HEREBY CERTIFY THAT THE ITEMS OR MATERIAL COVERED BY THIS DOCUMENT HAVE BEEN INSPECTED AND TESTED. THEY CONFORM TO THE APPROVED SPECIFICATION RELATIVE THERE TO AND ARE ACCEPTABLE. THIS IS SUBSTANTIATED EITHER BY MY OWN INSPECTION & TEST, OR BY SATISFACTORY DOCUMENTARY EVIDENCE FROM THE ORIGINAL SOURCE OF SUPPLY.

Alphacasting Inc.

DAHMANI AHMED

QC2

FORM.# 19,REV:D,16/08/2002

391 Ste Croix, St-Laurent, Qc., Canada H4N 2L3 - TEL.: (514) 748-7511 - FAX (514) 748-0237



ASTM B557 1"GL.(Man.Elong) (RB-KSI)

Specimen ID 16-1010

Test Number 16551

Report Number 8799

Test Date 12/21/2016 1:02:32 PM

Test Results

Diameter (In)	0.247
Area (Sq In)	0.048
Tensile (Ksi)	43.7
Yield (Ksi)	32.4
Total Elong (%)	6.80

Testing Machine Smart Model

Load Cell S/N (QD5131), Units (-Lbs) 10000

Crosshead Speed (Inches / min) or Rate 0.15

Extension or Position Measured by EZ.2-1 (5147)

By:  Date: 2016-12-21

DIE: 1909

MATERIEL: F357.0

T.THERMIQUE: T4 / T6

DATE PULLED: Dec. 21, 2016

PART/NO: D5415-1P

MAT.HEAT: 0863106

TEMP.(10C TO 50C): 26.1°C

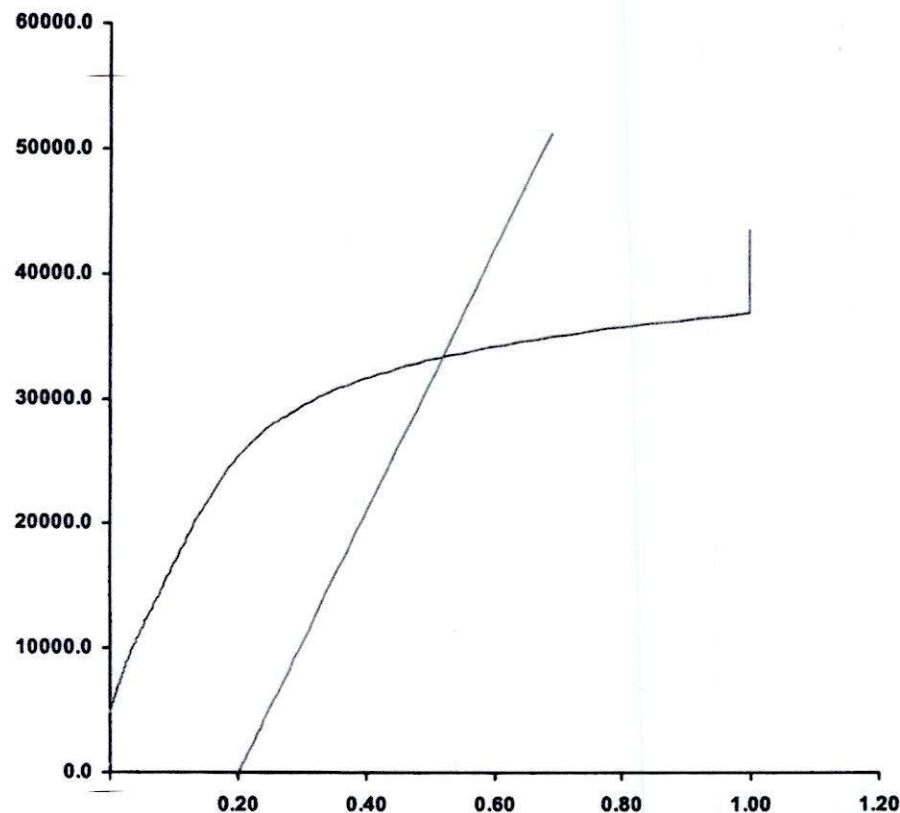
TM-10-DR(S/N:392107)

MELT: 22-11-2016

H.T.GRAPH: 13053/13076

SPECIFICATION: AMS 4289-13

Stress (Lbs / Inches ²) vs Extension (%)



Template No 200

21-Dec-16

ALPHACASTING.INC



**CERTIFICAT DE CONFORMITÉ
DE RESSUAGE
CERTIFICATE OF COMPLIANCE FOR
FLUORESCENT PENETRANT INSPECTION**

FPI Report #: # de Rapport Ressuage:	16-1293	Die #: # de moule:	1909	Part Number: # de Pièce:	D5415-1P
---	---------	-----------------------	------	-----------------------------	----------

Process Specification / Norme du Procédé: ASTM E-1417 & Alpha 3.10.004

Customer Spec. when required / Norme Client, quand requise :

PPS 20.03 ☐ DMC 0010 ☐ Pr 5000 ☐ BAPS 176-002 ☐ ☐

Jet de sable avec AFS 150 et nettoyer avec Turco 4215

Sandblast with AFS 150 and clean with Turco 4215 (Ref. Alpha Inst. 4.10.021)

Identify other if used / Identifié autre si utilisé :

Type I method A sensitivity Level 2

Water washable penetrant ZL60D

Identify other if used :

Identify other if used :

Identifier autre si utilisé :

Identifier autre si utilisé :

Coulée/Melt #	Heat # # de mat. première	Coulée/Melt #	Heat # # de mat. première	Coulée/Melt #	Heat # # de mat. première
22-11-2016	0863106				

F.P.I. Acceptance Specification
Norme d'acceptation Ressuage

F.P.I. Class: Classe Ressuage:	1	Grade:	B
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☒ AMS 2175 rev. A

☐ BAPS 176-002

☐ PPS 35.07

☐ BAERD GEN-009

☐ MIL-STD-1907

☐ IFC 40-931-01E

☐ OOMTF147273

☐ AIR 3380/C

Qty of parts processed:

2

Total lot accepted:

2

Quantité de pièces procédées:

Quantité totale acceptée:

Remarks / Remarques:

Performed By:

Effectué par:

Date:

19-12-2016

Highlighted areas represent Alphacasting standard operating practice /
Les zones en gris représentent les pratiques standard d'opération d'Alphacasting

ALL REFERENCED SPECIFICATIONS ARE TO THE LATEST REVISION / TOUTES LES NORMES EN RÉF. SONT À LA DERNIÈRE RÉVISION

INDUSTRIES INC.

E.T.M. INDUSTRIES INC.
310 HALL AVENUE
BOX 610
RENFREW, ON K7V 4E7
Canada
Ph: 613-432-6136
Fax: 613-432-8212

Pack List

Number: 133003

Date: 07-Apr-17

To

ALPHACASTING
391 BLVD ST- CROIX
ST. LAURENT, QC H4N 2L3
Canada

Ship To

ALPHACASTING
391 BLVD ST- CROIX
ST. LAURENT, QC H4N 2L3
Canada

Ph: 514-748-7511

Fax: 514-748-0237

Ph: 514-748-7511

Fax: 514-748-0237

Terms		Ship Via	
NET 60 DAYS		W/D: 24911	
Quantity	Description		
10 each	Part: D5415 SADDLE MACHINE ONLY DIE 1909 SO: 21571 **LOT #99099		
	Rev: PO: P03706 Line: 03R1		
CERTIFICATE OF COMPLIANCE: "I hereby certify that the material described above is in conformance with applicable physical and dimensional specifications; that it was manufactured in accordance with applicable process specifications; and has been inspected to verify conformance to those specifications." APPROVED SIGNATORY (QUALITY ASSURANCE)  α QC10 07/04/17			



E.T.M. INDUSTRIES INC.
310 HALL AVENUE
BOX 610
RENFREW, ON K7V 4E7
Canada
Ph: 613-432-6136
Fax: 613-432-8212

Pack List

Number: 133002

Date: 07-Apr-17

To

ALPHACASTING
391 BLVD ST- CROIX
ST. LAURENT, QC H4N 2L3
Canada

Ship To

ALPHACASTING
391 BLVD ST- CROIX
ST. LAURENT, QC H4N 2L3
Canada

Ph: 514-748-7511

Fax: 514-748-0237

Ph: 514-748-7511

Fax: 514-748-0237

Terms		Ship Via	
NET 60 DAYS		WO: 24749	
Quantity	Description		
2 each	Part: D5415 SADDLE MACHINE ONLY DIE 1909 WO# 24911 SO: 21571 **LOT #98467	Rev:	Line: 03
PO: P03706			
CERTIFICATE OF COMPLIANCE: "I hereby certify that the material described above is in conformance with applicable physical and dimensional specifications; that it was manufactured in accordance with applicable process specifications; and has been inspected to verify conformance to those specifications."  APPROVED SIGNATORY (QUALITY ASSURANCE)  07/04/17			



**CERTIFICAT DE CONFORMITÉ
DE RESSUAGE
CERTIFICATE OF COMPLIANCE FOR
FLUORESCENT PENETRANT INSPECTION**

FPI Report #: # de Rapport Ressuage:	17-0379	Die #: # de moule:	1909	Part Number: # de Pièce:	D5415-1P
---	---------	-----------------------	------	-----------------------------	----------

Process Specification / Norme du Procédé: ASTM E-1417 & Alpha 3.10.004

Customer Spec. when required / Norme Client, quand requise :

PPS 20.03 ☐ DMC 0010 ☐ Pr 5000 ☐ BAPS 176-002 ☐ ☐

**Jet de sable avec AFS 150 et nettoyer avec Turco 4215
Sandblast with AFS 150 and clean with Turco 4215 (Ref. Alpha Inst. 4.10.021)**

Identify other if used / Identifié autre si utilisé :

Type I method A sensitivity Level 2

Water washable penetrant ZL60D

Identify other if used : **TYPE 1 METHOD A LEVEL**
Identifier autre si utilisé : **3**

Identify other if used : **ZL67**
Identifier autre si utilisé : **ZL67**

Coulée/Melt #	Heat # # de mat. première	Coulée/Melt #	Heat # # de mat. première	Coulée/Melt #	Heat # # de mat. première
20-12-2016	863481				
22-12-2016	863106				

F.P.I. Acceptance Specification
Norme d'acceptation Ressuage

F.P.I. Class: **1**
Classe Ressuage: **1**
Grade: **B**

☒ AMS 2175 rev. A

☐ BAPS 176-002

☐ PPS 35.07

☐ BAERD GEN-009

☐ MIL-STD-1907

☐ IFC 40-931-01E

☐ OOMTF147273

☐

Qty of parts processed: Quantité de pièces procédées:	12	Total lot accepted: Quantité totale acceptée:	7
--	----	--	---

Remarks / Remarques: AFTER MACHINING

Performed By:

Effectué par:

Date:

07/04/2017

**Highlighted areas represent Alphacasting standard operating practice /
Les zones en gris représentent les pratiques standard d'opération d'Alphacasting**

ALL REFERENCED SPECIFICATIONS ARE TO THE LATEST REVISION / TOUTES LES NORMES EN RÉF. SONT À LA DERNIÈRE RÉVISION



Accredited



RADIOGRAPHIC INSPECTION REPORT & CERTIFICATE OF COMPLIANCE

[illegible]

Page 1 of 1

Melt Date(s): 22-11-2016

Heat No(s): 0863106

Qty Tested: 2

Qty Rejected: 0

Qty Accepted: 2

Inspector:

Colin



Date 09/01/2017

SIGNATURE AEROSPACE

6090 VANDEN ABEELE, ST-LAURENT, QUÉBEC, H4S1R9 Tel.: 514-333-4703 Fax : 514-333-4704



Certificat de Conformite Certificate of Compliance

144536 - 1

Client / Customer:

ALPHACASTING INC.
391 STE-CROIX
MONTREAL, QC, H4N2L3
CANADA

BUYER:

Date de Facture Invoice Date		Engendrer Par Generated By		Transport Courier		Customer Purchase Order No. P.O. Client	
19-Apr-2017		James Brennan, Prod. Manager				25141	
Sub Contract References				Process Details			
				CHEMICAL CONVERSION COATING ON PARTS AS PER DART SPECIFICATIONS QSI 005-11 PARA 4.1 REQUIREMENTS (INCLUDE ETCH)			
Line Item	Quantite Quantity	No. de Serie / Part Number Line Item Details	Part Rev.	Autre Information Additional Information		Drawing No. & Revision Masking Details (as applicable)	
1	7	D5415-1P SADDLE MAT: F357.0	A	JOB/ORDER #: DIE 1909,			

A.M.
α QCS
20-04-17

Ceci est pour certifier que les articles inscrits ont été procédés, inspectés et mis à l'essai selon votre bon de commande, dessins et spécifications.

This is to certify that the items listed herein have been processed, inspected and tested in accordance with your Purchase Order, drawings and specification requirements.

Signer pour et au nom de Signature Aerospace Ltd. / Signed for and on behalf of Signature Aerospace Ltd.

James Brennan, Prod. Manager



ALPHACASTING MOULAGE DE PRÉCISION INVESTMENT CASTING 391 STE-CROIX, ST-LAURENT, QUÉBEC, H4N-2L3			Inspection de l'Article Initial / Rapport de Vérification First Article Inspection / Verification Report GENERAL GUIDELINES	
Client / Customer (CR)			Moule No / DIE No. (CR)	1909
Description / Description (R)	SADDLE		Mat'l Condition (CR)	F357.0-T6
No. de Dessin / Dwg. No. (R)	D5415		Dwg Rev. (R)	A
No. de Pièces / Part No. (R)	D5415-1P		Part No Rev (R)	A
Spécification / Specification (O)	AMS 4289-13		No. de lot / Heat No. (CR)	0863106
Full FAI / Partial FAI (R)	F ☒	P ☐	No. de coulée / Melt N (CR)	22-11-16
Detail FAI / Assembly FAI (R)	D ☒	A ☐	Serial Number (CR)	N/A
(R) Required: This is mandatory information; (CR) Conditionally Required: This field must be completed when applicable; (O) Optional				
Notes (O) :				

LISTE DES PROCÉDÉS / PROCESS LIST				
Caractéristique / Characteristic	Conformance / Conformité (R)			Document (O)
	Oui	Non	N/A	
	Yes	No		
Dimensionnel / Dimensional	☐	☒	☐	NCR 17-6255
Identification/ Part Marking	☒	☐	☐	
Traitement / Heat Treat	☒	☐	☐	SOL. ANNEAL (T4) GRAPH # 13053 / AGING (T6) GRAPH #13076
Dureté / Hardness	☒	☐	☐	93.0 -96.0 HRE
Spectromètre / Spectrometer	☒	☐	☐	Alphacasting C/C
Essai de Traction / Tensile Test	☒	☐	☐	TensileE Report 16-1010
Microstructure Photo	☐	☐	☒	
Radiographie / X-Ray	☒	☐	☐	X-RAY Report # : FN 7210
Ressuage / F.P.I	☒	☐	☐	F.P.I Report # : 16-1293 & 17-0379
Magnétique / M.P.I	☐	☐	☒	
Ultrasonique / Ultrasonic	☐	☐	☒	
Autres / Others	☒	☐	☐	MACHINING C/C # 133002 & CONV. COAT C/C # 144536-1

Inspecté Par / Inspected By	Signature et titre/ Signature & Title (R)	Estampe/Stamp (R)	Date (R)
R. GACI	Q.C Technician. <i>[Signature]</i>		2017-04-20

Note: Si l'échantillon soumis est approuvé, S.V.P. retourner ce document à votre représentant d'alphacasting. If samples are approved, please sign and return form to your alphacasting representative.				
Approbation Client / Customer Approval	Acc.	Rej.	Signature & Titre / Title	Date
	☐	☐		

Form 1: Part Number Accountability

1. Part Number D5415-1P	2. Part Name SADDLE	3. Serial Number N/A	4. FAI Report Number 1909
5. Part Revision Level N/A	6. Drawing Number D5415	7. Drawing Revision level A	8. Additional Changes N/A
9. Manufacturing Process Reference Tensile # # 16-1010	10. Organization Name Alphacasting	11. Supplier Code	12. P.O. Number PO033686
13. Detail FAI ☐ Assembly FAI ☒	14. Full FAI ☒ Partial FAI ☐ Reason for Partial FAI:	Baseline Part Number including revision level	
a) If above part number is a detail part only, go to Field 19 b) If above part number is an assembly, go to the "INDEX" section below.			
INDEX of part numbers or sub-assembly numbers required to make the assembly noted above.			
15. Part Number	16. Part Name	17. Part Serial Number	18. FAI Report Number
1) Signature indicates that all characteristics are accounted for; meet drawing requirements or are properly documented for disposition. 2) Also indicate if the FAI is complete per Section 5.4: ☐ FAI complete ☒ FAI not Complete			
19. Signature R. GACI	QC1	20. Date 2017-04-20	
21. Reviewed By A. MONGE	QC9	22. Date 2017-04-21	
23. 23. Customer Approval		24. Date	

FORM 2: PRODUCT ACCOUNTABILITY - RAW MATERIAL, SPECIFICATIONS AND SPECIAL PROCESS(s),
FUNCTIONAL TESTING

1. Part Number D5415-1P	2. Part Name SADDLE		3. Serial Number N/A		4. FAI Report Number 1909
5. Material or Process Name	6. Specification Number	7. Code	8. Special Process Supplier Code	9. Customer Approval Verification (Yes/No/NA)	10. Certificate of Conformance number
MATERIAL:					
F357.0	AMS 4289-13			Yes	ALPHA C/C
HEAT TREAT:					
SOLUTION ANNEAL (T4)	AMS 2771E			Yes	GRAPH # 13053
AGING (T6)	AMS 2771E			Yes	GRAPH # 13076
F.P.I CL. 1 GR. B - CASTING	AMS 2175A			Yes	Report # 16-1293
F.P.I CL. 1 GR. B - MACHINING					Report # 17-0379
X-Ray CL. 1 GR. B	AMS 2175A			Yes	X-Ray Report # FN 7210
MACHINING	PER DWG D5415-1P			Yes	ETM C/C # 133002
CONV. COAT	QSI 005-11 PARA 4.1			Yes	Signature : C/C # 144536-1
11. Functional Test Procedure Number	12. Acceptance report number, if applicable				
N/A	N/A				
13. Comments					
14. Prepared By		R.GACI		15: Date	
		αQC1		2017-04-20	

FORM 3: CHARACTERISTIC ACCOUNTABILITY, VERIFICATION AND COMPATIBILITY EVALUATION

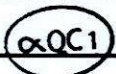
1. Part Number			2. Part Name			3. Serial Number		4. FAI Report	
D5415-1P			SADDLE			N/A		1909	
Characteristic Accountability				Inspection / Test Results			Optional Fields		
5. Char. No.	6. Ref. Loc.	7. Char. Designator	8. Requirement	9. Results	10. Designed Tooling	11. Non-Conformance Number	C ✓	NC X	14. [Insert columns, etc, as required by Organization or Customer]
1	1-A8	Note #1	MATERIAL : MAKE FROM D5415-1C	AS SPECIFIED	INFOS SPEC		✓		
2	1-A8	Note #2	FINISH: PRIME PER DART QSI 005 4.2.1 PAINT WHITE PER DART QSI 005 4.2.2	N/A					Not done at this stage
3	1-A8	Note #3	TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED.	CONFORM	INFOS SPEC		✓		
4	1-A8	Note #4	UNITS: INCHES UNLESS OTHERWISE NOTED.	AS SPECIFIED	INFOS DWG		✓		
5	1-A8	Note #5	BREAK SHARP EDGES : N/A	N/A					
6	1-A8	Note #6	IDENTIFICATION: IDENTIFY B/N PER QSI 044. LOCATE APPROX AS SHOWN	CONFORM	INFOS SPEC		✓		
7	1-A8	Note #7	WEIGHT: 3.86 Lbs	N/A					Not done at this stage
8	2-A8	Note #1	MATERIAL : CAST FROM F357.0 PER AMS 4289 & HEAT TREAT TO T6 CONDITION PROPERTIES TO BE VERIFIED BY SUB-SIZED SEPARATELY CAST TEST BARS.	CONFORM	INFOS SPEC		✓		
9	2-A8	Note #2	FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1	CONFORM	INFOS SPEC		✓		CofC 144536-1
10	2-A8	Note #3	TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED.	CONFORM	INFOS SPEC		✓		
11	2-A8	Note #4	UNITS: INCHES UNLESS OTHERWISE NOTED.	AS SPECIFIED	INFOS DWG		✓		
12	2-A8	Note #5	BREAK SHARP EDGES : 0.005 TO 0.010 MAX	.005 - .007	OPT. COMP		✓		
13	2-A8	Note #6	IDENTIFICATION: DART P/N & LOGO CAST INTO PART AS SHOWN	CONFORM	VISUAL CHECK		✓		
14	2-A8	Note #7	WEIGHT: 3.72 Lbs	3.63 Lbs	Weight Balance		✓		
15	2-A8	Note #8	COSMETIC WELD REPAIR PER AMS 2694 PRIOR TO INSPECTION AND HEAT TREAT.	AS SPECIFIED	INFOS SPEC		✓		
The signature indicates that all characteristics are accounted to meet drawing requirements or are properly documented for disposition.									
12.Prepared By: R. GACI							13.Date: 2017-04-20		

αQC1

FORM 3: CHARACTERISTIC ACCOUNTABILITY, VERIFICATION AND COMPATIBILITY EVALUATION

1. Part Number			2. Part Name			3. Serial Number		4. FAI Report	
D5415-1P			SADDLE			N/A		1909	
Characteristic Accountability				Inspection / Test Results			Optional Fields		
5. Char. No.	6. Ref. Loc.	7. Char. Designator	8. Requirement	9. Results	10. Designed Tooling	11. Non-Conformance Number	C ✓	NC X	14. [Insert columns, etc, as required by Organization or Customer]
16	2-A8	Note #9	INSPECTION: EACH PART MUST PASS X-RAY CL1 GR. B PER AMS 2175 EACH PART MUST PASS F.P.I CL1 GR. B PER AMS 2175	CONFORM	INFOS SPEC		✓		
17	2-A8	Note #10	ALL NON DIMENSIONED FEATURES MUST MAINTAIN A TOLERANCE OF ± 0.030 PER CAD FILE D5415-1 REV A.STP	CONFORM	INFOS SPEC		✓		
18	2-A8	Note #11	ANY ADDITIONAL MATERIAL REQUIRED FOR POST CASTING MACHINING IS NOT SPECIFIED ON THIS DRAWING.	AS-SPECIFIED	INFOS SPEC		✓		
19	2-D3	N/A	DART LOGO : DART AEROSPACE	CONFORM	VISUAL CHECK		✓		SEE NOTE #6
20	2-D3	N/A	R 1.0 ± 0.100	R 1.0	RAD. GAUGE		✓		
21	2-D3	N/A	R 1.0 ± 0.100	R 1.0	RAD. GAUGE		✓		
22	2-C2	N/A	75° $\pm 1/2^\circ$	75.14° - 75.49°	CMM		✓		
23	2-C5	N/A	2.14 ± 0.030	2.118 - 2.124	CMM		✓		
24	2-C5	N/A	4.33 ± 0.030	4.324	CMM		✓		
25	2-D5	N/A	7.30 ± 0.030	7.289	CMM		✓		
26	2-D6	N/A	1.19 ± 0.030	1.188	CALIPER		✓		
27	2-B3	N/A	DART PART NUMBER : D5415-1	CONFORM	VISUAL CHECK		✓		SEE NOTE #6
28	2-B3	N/A	0.280 ± 0.010 MIN. WALL THICK. THROUGH TRANSITION	0.281 - 0.294	THICK GAUGE		✓		
29	2-B2	N/A	0.36 ± 0.030	0.366 - 0.387	CALIPER		✓		
30	2-B2	N/A	R 0.063 TYP ± 0.010	0.031 - 0.062	RAD. GAUGE	NCR 17-6255		X	
31	2-B4	N/A	11.98 REF.	11.875 REF.	CMM				
32	2-B4	N/A	12.86 ± 0.030	12.889	CMM		✓		
The signature indicates that all characteristics are accounted to meet drawing requirements or are properly documented for disposition.									
12.Prepared By: R. GACI						13.Date: 2017-04-20			

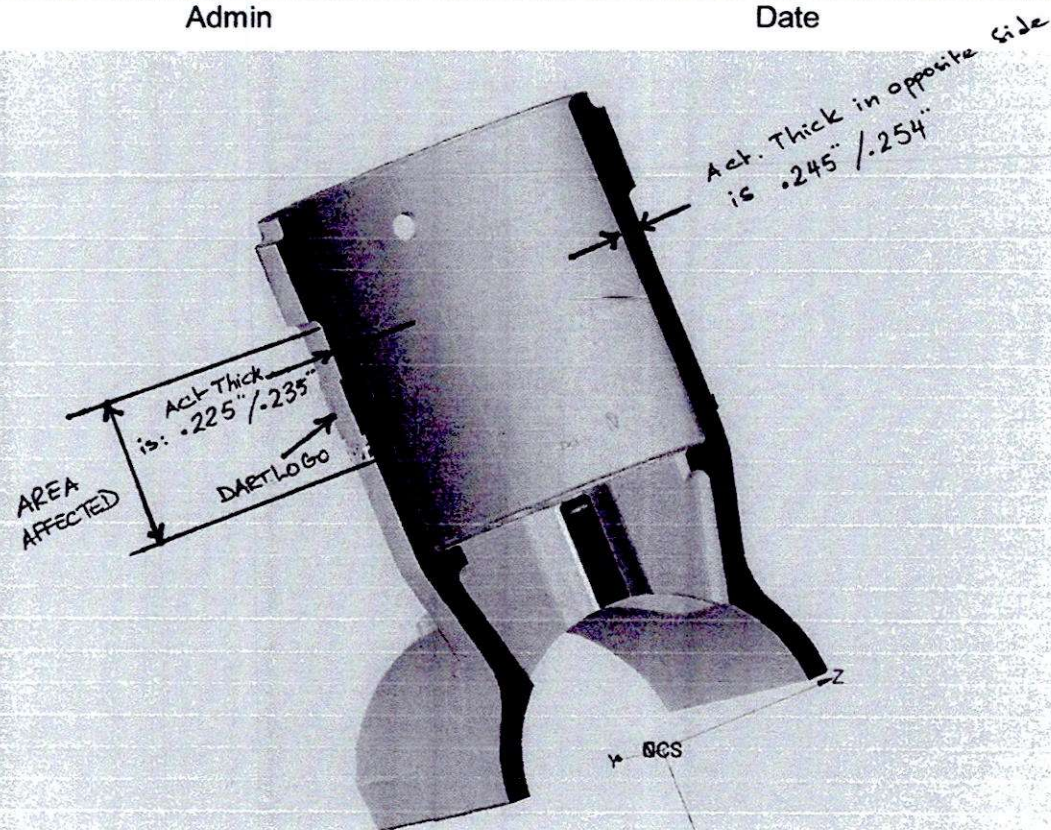
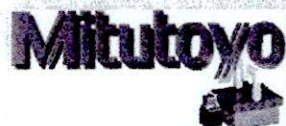
FORM 3: CHARACTERISTIC ACCOUNTABILITY, VERIFICATION AND COMPATIBILITY EVALUATION

1. Part Number			2. Part Name			3. Serial Number		4. FAI Report	
D5415-1P			SADDLE			N/A		1909	
Characteristic Accountability				Inspection / Test Results			Optional Fields		
5. Char. No.	6. Ref. Loc.	7. Char. Designator	8. Requirement	9. Results	10. Designed Tooling	11. Non-Conformance Number	C ✓	NC X	14. [Insert columns, etc, as required by Organization or Customer]
33	2-B4	N/A	3.10 ± 0.030	3.101 - 3.104	CMM		✓		
34	2-B5	N/A	3.30 ± 0.030	3.271 - 3.274	CMM		✓		
35	2-B5	N/A	0.18 ± 0.030	0.186	CALIPER		✓		
36	2-C4	N/A	1.00 ± 0.030	1.021 - 1.023	CALIPER		✓		
37	2-D7	N/A	1.37 REF.	1.195 - 1.358 REF	CALIPER				
38	2-D7	N/A	7.40 REF.	7.395	CMM		✓		
39	2-C6	N/A	R 1.790 ± 0.010	1.798	CMM		✓		
40	2-C8	N/A	0.100 ± 0.010	0.106	CMM		✓		
41	2-D8	N/A	R 0.10 ± 0.03	0.093	CMM		✓		
42	2-D8	N/A	R 0.10 ± 0.03	0.093	CMM		✓		
43	3-C3	N/A	4.10 ± 0.030	4.098	CMM		✓		
44	3-B2	N/A	4.30 ± 0.030	4.307	CMM		✓		
45	3-B2	N/A	3.550 ± 0.010	3.557	CMM		✓		
46	3-B5	N/A	1.69 ± 0.030	1.673	CMM		✓		
47	3-B5	N/A	1.96 ± 0.030	1.934	CMM		✓		
48	3-B5	N/A	0.265 ± 0.015 WALL THICKNESS	0.261 - 0.271	THICK GAUGE		✓		
49	3-B4	N/A	∅ 0.325 +0.006 / - 0.001	0.326 - 0.327	CMM PIN GAUGE		✓		
50	3-D3	N/A	0.200 ± 0.015 RIB THICKNESS, TYP	0.202 - 0.214	THICK GAUGE		✓		
51	3-D2	N/A	0.62 ± 0.030	0.627	CMM		✓		
52	3-C3	N/A	6.0 REF	5.990 REF	CMM				
The signature indicates that all characteristics are accounted to meet drawing requirements or are properly documented for disposition.									
12.Prepared By: R. GACI 							13.Date: 2017-04-20		

ALPHACASTING FORM 3 PER AS9102

FORM 3: CHARACTERISTIC ACCOUNTABILITY, VERIFICATION AND COMPATIBILITY EVALUATION

1. Part Number				2. Part Name			3. Serial Number		4. FAI Report	
D5415-1P				SADDLE			N/A		1909	
Characteristic Accountability				Inspection / Test Results			Optional Fields			
5. Char. No.	6. Ref. Loc.	7. Char. Designator	8. Requirement	9. Results	10. Designed Tooling	11. Non-Conformance Number	C ✓	NC ✗	14. [Insert columns, etc., as required by Organization or Customer]	
53	3-D5	N/A	0.62 ± 0.030	0.646	CMM		✓			
54	3-D5	N/A	0.86 ± 0.030	0.887 - 0.888	CMM		✓			
55	3-D5	N/A	2.6 REF	2.548 REF	CMM		✓			
56	3-D5	N/A	3.85 ± 0.030	3.847 - 3.865	CMM		✓			
57	3-D5	N/A	0.550 ± 0.010	0.542 - 0.557	CMM		✓			
58	3-D4	N/A	4.35 ± 0.030 (2PL)	4.342 - 4.371	CMM		✓			
59	3-C7	N/A	4.32 ± 0.030	4.294 - 4.303	CMM CALIPER		✓			
60	3-C7	N/A	Ø 3.580 ± 0.010	3.573 - 3.580	CMM CALIPER		✓			
61	3-C7	N/A	0.03 ± 0.030	0.031 - 0.033	CALIPER		✓			
62	3-C7	N/A	45° ± 1/2°	45°	ANGLE GAUGE		✓			
63	3-B7	N/A	R 0.06 +0.004 / - 0.001	0.062	RAD. GAUGE		✓			
64	3-B6	N/A	0.250 ± 0.015	0.225 - 0.254	THICK GAUGE	NCR 17-6255		✗		
65	3-B6	N/A	Ø 0.60 +0.008 / - 0.001	0.602	CMM		✓			
66	3-B6	N/A	0.265 ± 0.015 WALL THICKNESS	0.258 - 0.272	CMM		✓			
67	3-A8	N/A	Ø 0.719 ± 0.010	0.720	CMM		✓			
68	3-B8	N/A	2.30 ± 0.030	2.279 - 2.281	CMM		✓			
69	3-B8	N/A	3.10 REF	3.088 REF	CMM					
The signature indicates that all characteristics are accounted to meet drawing requirements or are properly documented for disposition.										
12. Prepared By: R. GACI QC1							13. Date: 2017-04-20			



view 1
1909 0.250 +/- .0.010
THICKNESS ISSUE

Sheet Thickness
Meas. mode surf
Max. deviation
Mean deviation
Min. deviation

Bestfit
Move
Rot.

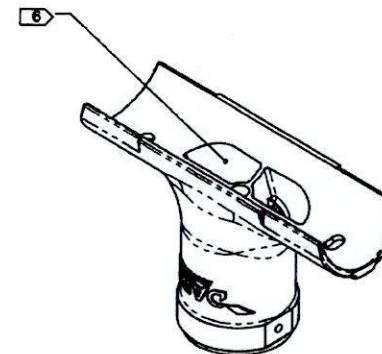
Meas. mode edge
Max. Deviation
Mean Deviation
Min. Deviation

AFFECTED AREA:
Act: Thick is :
•225" - .235"
S/B: •250 ± .015"

D5415-1 SADDLE

NOTES:

- 1) MATERIAL: MAKE FROM D5415-1C
- 2) FINISH: PRIME PER DART QSI 005 4.2.1
PAINT WHITE PER DART QSI 005 4.2.2
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: IDENTIFY B/N PER QSI 044. LOCATE APPROX AS SHOWN
- 7) WEIGHT: 3.86 LBS



RELEASED

2016 SEP 15
100 10-101

A NEW ISSUE		ML	16.05.17
REV.	DESCRIPTION	BY	DATE
DESIGN	ML		
DRAWN	ML		
CHECKED	AJS		
MFG. APPR.	DD		
APPROVED	HS		
DE APPR.	DS		
DATE	16.05.17		

DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA		REV. A
DRAWING NO.	D5415	SHEET 1 OF 3
TITLE	SADDLE	SCALE
		NTS

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THIS DOCUMENT IS PRIVATE AND PROPRIETARY, AND IS SUPPLIED ON THE EXPRESS UNDERSTANDING THAT IT IS NOT TO BE USED FOR ANY PURPOSES OR DISCLOSED OR REPRODUCED IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF DART AEROSPACE LTD.

mo 17 juin 2019

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: <u>177606</u> Part No. <u>D54153</u> NCR No. <u>19-7130</u>	DISPOSITION Rework ☒ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS <table style="width:100%;"> <tr> <td>Skid-tube ☐</td> <td>Cross tube ☐</td> <td>Water Jet ☐</td> <td>Engineering ☒</td> </tr> <tr> <td>Machining ☐</td> <td>Small Fab ☐</td> <td>Prod. Eng. Coord. ☐</td> <td>Quality ☐</td> </tr> <tr> <td>Thermoforming ☐</td> <td>Finishing ☐</td> <td>Rec/Store/Packaging ☐</td> <td>Other ☐</td> </tr> <tr> <td>Large Fab ☐</td> <td>Composite ☐</td> <td>Supplier ☐</td> <td></td> </tr> </table>				Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☒	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐																																																			
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Large Fab ☐	Composite ☐	Supplier ☐																																																																					
Date: <u>18/5/16</u>		Step #: <u>210</u>		QTY Effective: <u>2</u>		MRB (QSI042) Approval <u>DAS</u> <u>12</u> <u>9-89</u> <u>18/5/16</u>																																																																	
Description Work Order Deviation				Disposition																																																																			
<u>3 cast saddles to be used for Eng testing. Re-work remaining 2 saddles to remove embossed p/n.</u>				<u>Acceptable to grind-off "D5415-1" p/n and touch up prime/paint per dwg. Acceptable to stick reworked saddles.</u>																																																																			
				Completed By <u>AS</u> <u>18-5-16</u> <u>Sheldon</u> Lead hand / Supervisor Approval Verification <u>DAS</u> <u>9</u> <u>9-89</u> <u>18-05-22</u> QC / QA Coordinator <u>DAS</u> Approval <u>9</u> <u>9-89</u> <u>18-05-27</u>																																																																			
Root Cause				FAULT CATEGORY																																																																			
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